PCT

DECLARATION OF NON-ESTABLISHMENT OF INTERNATIONAL SEARCH REPORT

(PCT Article 17(2)(a), Rules 13ter.1(c) and Rule 39)

Applicant's or agent's file reference	IMPORTANT DECLARATION	Date of mailing *(day/month/year)*
ML/C1263.1/M		29/10/2001
International application No.	International filing date *(day/month/year)*	(Earliest) Priority date *(day/month/year)*
PCT/GB 01/ 02949	03/07/2001	06/07/2000
International Patent Classification (IPC) or both national classification and IPC	A01K/00	
Applicant		
MEDICAL RESEARCH COUNCIL		

This International Searching Authority hereby declares, according to Article 17(2)(a), that **no international search report will be established** on the international application for the reasons indicated below

1. [ ] The subject matter of the international application relates to:
   - a. [ ] scientific theories.
   - b. [ ] mathematical theories
   - c. [ ] plant varieties.
   - d. [ ] animal varieties.
   - e. [ ] essentially biological processes for the production of plants and animals, other than microbiological processes and the products of such processes.
   - f. [ ] schemes, rules or methods of doing business.
   - g. [ ] schemes, rules or methods of performing purely mental acts.
   - h. [ ] schemes, rules or methods of playing games.
   - i. [ ] methods for treatment of the human body by surgery or therapy.
   - j. [ ] methods for treatment of the animal body by surgery or therapy.
   - k. [ ] diagnostic methods practised on the human or animal body.
   - l. [ ] mere presentations of information.
   - m. [ ] computer programs for which this International Searching Authority is not equipped to search prior art.

2. [X] The failure of the following parts of the international application to comply with prescribed requirements prevents a meaningful search from being carried out:
   [ ] the description [X] the claims [ ] the drawings

3. [ ] The failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions prevents a meaningful search from being carried out:
   - [ ] the written form has not been furnished or does not comply with the standard.
   - [ ] the computer readable form has not been furnished or does not comply with the standard.

4. Further comments: See further information sheet PCT/ISA/203

Name and mailing address of the International Searching Authority	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016.	Paul Faux

Form PCT/ISA/203 (July 1998)

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 203

All present claims relate to an extremely large number of possible products. In fact, the claims contain so many options that a lack of clarity and/or conciseness within the meaning of Article 6 PCT arises to such an extent as to render a meaningful search of the claims impossible. Consequently, no search report can be established for the present application.
In connection with this, it should be noted that the independent claims are directed to a desiderata without specifying concrete technical terms. Moreover, the said desiderata will largely depend upon the specific animal encaged.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

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US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE
in its capacity as designated Office

NOTIFICATION CONCERNING DOCUMENT TRANSMITTED

Date of mailing (day/month/year)	
17 January 2002 (17.01.02)	
International application No.	**International filing date** (day/month/year)
PCT/GB01/02949	03 July 2001 (03.07.01)
Applicant	
MEDICAL RESEARCH COUNCIL et al	

The International Bureau transmits herewith the following documents and number thereof:

_____ copy(ies) of declaration(s) (Rule 47.1(a-ter))

The International Bureau of WIPO **34, chemin des Colombettes** **1211 Geneva 20, Switzerland**	Authorized officer SEYMANY Malathib
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Jorge Galvan
(Typed or printed name of person mailing paper or fee)

(Signature of person mailing paper or fee)

Box No. VIII (iv) DECLARATION OF INVENTORSHIP (only for the purposes of the designation of the United States of America)

The declaration must conform to the following standardized wording provided for in Section 214; see Notes to Boxes Nos. VIII, VIII (i) to (v) (in general) and the specific Notes to Box No. VIII (iv). If this Box is not used, this sheet should not be included in the request.

Declaration of inventorship (Rules 4.17(iv) and 51*bis*.1(a)(iv)) for the purposes of the designation of the United States of America:

I hereby declare that I believe I am the original, first and sole (if only one inventor is listed below) or joint (if more than one inventor is listed below) inventor of the subject matter which is claimed and for which a patent is sought.

This declaration is directed to the international application of which it forms a part (if filing declaration with application).

This declaration is directed to international application No. PCT/..... (if furnishing declaration pursuant to Rule 26*ter*).

I hereby declare that my residence, mailing address, and citizenship are as stated next to my name.

I hereby state that I have reviewed and understand the contents of the above-identified international application, including the claims of said application. I have identified in the request of said application, in compliance with PCT Rule 4.10, any claim to foreign priority, and I have identified below, under the heading "Prior Applications," by application number, country or Member of the World Trade Organization, day, month and year of filing, any application for a patent or inventor's certificate filed in a country other than the United States of America, including any PCT international application designating at least one country other than the United States of America, having a filing date before that of the application on which foreign priority is claimed.

Prior Applications: 0016507.6 GB 06-07-2000

I hereby acknowledge the duty to disclose information that is known by me to be material to patentability as defined by 37 C.F.R. § 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the PCT international filing date of the continuation-in-part application.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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(of signature which is not contained in the request, or of the declaration that is corrected or added under Rule 26*ter* after the filing of the international application)

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Date: X 20/6/2001
(of signature which is not contained in the request, or of the declaration that is corrected or added under Rule 26*ter* after the filing of the international application)

☐ This declaration is continued on the following sheet, "Continuation of Box No. VIII (iv)".

PATENT COOPERATION TREATY

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   - d. ☐ animal varieties.
   - e. ☐ essentially biological processes for the production of plants and animals, other than microbiological processes and the products of such processes.
   - f. ☐ schemes, rules or methods of doing business.
   - g. ☐ schemes, rules or methods of performing purely mental acts.
   - h. ☐ schemes, rules or methods of playing games.
   - i. ☐ methods for treatment of the human body by surgery or therapy.
   - j. ☐ methods for treatment of the animal body by surgery or therapy.
   - k. ☐ diagnostic methods practised on the human or animal body.
   - l. ☐ mere presentations of information.
   - m. ☐ computer programs for which this International Searching Authority is not equipped to search prior art.

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(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

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Declaration under Rule 4.17:
— *of inventorship (Rule 4.17(iv)) for US only*

Published:
— *with declaration under Article 17(2)(a); without abstract; title not checked by the International Searching Authority*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 02/03782 A2

(54) Title: IMPROVEMENTS IN OR RELATING TO ENVIRONMENTAL ENRICHMENT OF CAGED ANIMALS

(57) Abstract:

Title: Improvements in or Relating to Environmental Enrichment of Caged Animals

Field of the Invention

This invention relates to a cage and an item of cage furniture for providing environmental enrichment to a caged animal, and to a method of making such a cage and such an item of cage furniture.

Background of the Invention

Animals, especially rodents, such as mice, rats and hamsters, are often kept in a cage as domestic pets. It is well known to provide shelter-type objects and other items in the cage, in order to create a more stimulating environment for the animal. This is referred to as environmental enrichment, and the articles used in cages to provide such enrichment are referred to generally as "cage furniture".

As well as being kept as domestic pets, rodents are also kept in cages for use in research of various kinds. Conventionally, cages housing animals for use in research purposes are substantially devoid of cage furniture. However, there is a growing realisation that animals kept for research purposes should also be provided with an enriched environment, and some items of cage furniture intended for use in industrial/research settings are now available. It is a general object of the invention to provide an improved cage or type of cage furniture, especially an item of cage furniture for use in cages housing animals for use in industrial/research settings.

Summary of the Invention

In a first aspect the invention provides a cage or an item of cage furniture for use by a caged animal, the cage or cage furniture comprising a material which is transparent or translucent to a human observer, but is perceived as being substantially darkened or opaque by the caged animal.

In embodiments of the invention in the form of a cage, the cage may be of generally conventional construction.

In embodiments of the invention in the form of an item of cage furniture, the item conveniently takes the form of a shelter, large enough for at least one caged animal to be accommodated therewithin, preferably large enough to accommodate two or more caged animals.

The cage or item of cage furniture in accordance with the invention is typically intended for use with one or more caged rodents, especially a rat or, more preferably, a mouse, and will therefore be dimensioned accordingly.

Preferably a cage or item of cage furniture in accordance with the invention is substantially or entirely formed from a substance which is transparent or translucent to a human observer but substantially darkened or opaque to the caged animal. In preferred embodiments, the cage or the item of cage furniture is formed entirely from a synthetic plastics material, preferably by moulding, and preferably as a single component. It is also preferred that the material comprising the cage or the cage furniture is resistant to repeated autoclaving (e.g. substantially retains its original shape and degree of transparency/translucency to a human observer after at least 100 passes through an autoclave operating under normal sterilisation conditions of 121°C). Suitable commercially available plastics materials include polyester; polysulfone, e.g. in the form of H-Temp (H-Temp is a Trade Mark) from Techniplast; polytherimide, e.g. in the form of U-Temp (U-Temp is a Trade Mark) from Techniplast; and polycarbonate, e.g. in the form of Makrolon (Makrolon is a Trade Mark).

Typically the cage or item of cage furniture will be formed from a coloured material. The colour may be an inherent property of the material, or the material may comprise a tinting compound or mixture to provide the desired colour. In preferred embodiments, the cage or item of cage furniture comprises, and is desirably substantially or entirely formed from, a red-coloured or red-tinted material. By way of explanation, the inventors have observed that rodents, especially mice, are significantly less sensitive to red light than are humans.

Accordingly, shelters comprising or formed from red-coloured or red-tinted materials are perceived by these animals as being rather dark, which thus approximates more closely to the holes or nests which mice use in their natural habitat. The inventors have discovered that this encourages greater use of the shelter, and behavioural activity which more closely follows that adopted by the animals in their natural habitat.

At the same time, being transparent or translucent to humans, a person working with or looking after the caged animals, can observe the animals at all times, even if they are inside a shelter-type item of cage furniture. Thus, for example, a researcher can monitor the behaviour of the animals visually, and can count the number of animals in a cage, at any time. Thus a cage or an item of cage furniture in accordance with the invention provides an improved degree of environmental enrichment for the caged animals, whilst not obstructing visual observation of the animals within the cage or using the cage furniture.

In particular the inventors have surprisingly found that materials with particular optical qualities are preferred for cages and/or items of cage furniture, especially such cages or items of cage furniture intended for rodents such as rats and, especially, mice.

In preferred embodiments, the cage or item of cage furniture comprises or consists of a material which substantially blocks (i.e. transmits less than 20%, preferably less than 15% of) visible light with a wavelength less than 540nm. Desirably, the material substantially blocks visible light with a wavelength of less than 560nm, more preferably less than 570nm and most preferably 580nm. Such materials are commercially available and include readily available plastics filters, especially "cut-on" filters.

A particularly preferred material (such as a Lee polyester filter with a "cut-on" wavelength of 593nm) substantially blocks (i.e. transmits less than 20% of) visible light with a wavelength of less than 580nm, whilst being transparent (i.e. transmitting at least 60%) of visible light with a wavelength of 600nm or more.

Without wishing to be bound by any particular theory, the inventors believe that caged animals such as rodents prefer cages and shelters to be darkened relative to the surrounding environment, but that the cage or shelter should not be perceived by the animals as completely dark, so as to allow some light cues to animals within the cage or shelter as to the presence of other animals (e.g. potential predators) outside. According to this hypothesis, a preferred cage or cage furniture material (as represented by 'B' in Figures 3 and 4) transmits some light of non-red or very short red wavelengths (e.g. 580-590nm), to which the animals are sensitive and therefore provides the animals with some visual cues. However, the great majority of visible light wavelengths (below 580nm), to which the animals are sensitive, are substantially blocked so as to provide a desirable darkening. Materials (C-E in Figures 3-4) which do not transmit sufficient light in the 580-590nm wavelength range do not give the animals sufficient light to provide the desired visual cues, and are therefore not so suitable, whilst other materials (e.g. A in Figures 3-4) transmit too much light in the 580-590nm range and are not perceived by the animals as being sufficiently dark.

From the point of view of a human observer, however, material 'B' is substantially transparent in the range 600nm and above, to which the human eye is reasonably sensitive, so that animals within the cage or item of cage furniture are readily visible.

For present purposes, "visible light" is intended to mean light having a wavelength in the range 350-700nm.

A preferred embodiment of cage furniture in accordance with the invention takes the form of a substantially right-angled triangular shaped floorless shelter, which can therefore be located in a corner of a cage, leaving a considerable free area for the animals to more around outside the shelter. In addition, such a corner location tends to prevent the animals from moving the shelter (if unfixed), because the cage abuts the shelter on two sides.

If desired, the cage furniture can be provided with fixing means to restrict the movement of the cage furniture within the cage. Typically such fixing means comprises a fixing member, which engages with the cage, conveniently with the roof or lid thereof. In one

embodiment the fixing means comprises a chain (typically metallic) which detachably engages with one or more bars in the lid of the cage. This arrangement allows for lifting of the cage furniture when the lid of the cage is removed, thus enabling a person to obtain access to any of the animals in the cage (e.g. for removal from the cage for whatever reason).

Further, a preferred embodiment of the invention will comprise at least two, possibly more, entrances into the shelter.

In a second aspect the invention provides a method of making a cage or an item of cage furniture, the method comprising the step of forming said cage or item of cage furniture, so as to comprise a material which is transparent or translucent to a human observer, but is perceived as being substantially darkened or opaque by a caged animal. Preferably performance of the method results in a cage or an item of cage furniture having one or more of the preferred features of the first aspect of the invention as defined above.

The invention will now be further described by way of illustrative example and with reference to the accompanying drawings, in which:

Figure 1 shows a prototype of an item of cage furniture in accordance with the invention in position in a corner of a conventional animal cage;

Figure 2 shows, to a different scale, the prototype illustrated in Figure 1 partially removed from the cage; and

Figures 3 and 4 are graphs of Transmission (%) against Wavelength (nm).

Example 1

A preferred embodiment of an item of cage furniture in accordance with the invention takes the form of a floodless shelter, formed from a single piece of synthetic plastics material which is translucent to a human observer, but tinted with a red colouration. A prototype of the embodiment is shown in Figures 1 and 2.

With reference to Figure 2, the shelter 10 is substantially triangular in shape, and may therefore be conveniently located in a corner of a conventional rodent cage. The shelter 10 is suitably dimensioned such that at least two mice or similar-sized animals can be accommodated therewithin.

The shelter 10 has two means of entrance/egress, a "main" entrance 12, and a "minor" entrance 14. The main entrance 12 takes the form of a three-sided short tunnel-like addition to the front face of the shelter 10, which faces the space inside the cage. The minor entrance 14 is formed by a triangular-shaped raised corner portion 16 of the otherwise flat roof 18 of the shelter 10.

The raised corner portion 16 comprises a perforation, so as to receive fixing means, which fixing means comprises a metal chain 20. The chain 20 is looped around a bar in the lid of the cage, such that when the lid of the cage is raised, the shelter 10 is also lifted. The chain 20 comprises a barrel-like portion, which allows two ends of the chain to be detachably engaged in a screw-threaded engagement, such that the chain may be closed to form a loop, or opened to remove the shelter from the cage lid.

The flat roof 18 and the flat portion of the main entrance 12 provide two substantially horizonal stepped surfaces, to allow, for example, for caged animals to climb between the floor of the cage and the roof 18 of the shelter 10.

The shelter 10 is formed from a single piece of Makrolon polycarbonate synthetic plastics material having a red tint. This material is resistant to repeated autoclaving washing, and is also resistant to gnawing and chewing by rodents. The material is also essentially non-toxic to humans and rodents.

The sides of the shelter 10 are about 11.5cm long, whereas the front face (containing the main entrance 12) is about 16cm long. The main body of the shelter 10 is about 6cm high. The main entrance 12 forms a short tunnel, projecting about 2cm from the front of the shelter 10. The main entrance 12 is about 4½cm wide and 2½cm high.

The inventors have observed that a low entrance is just high enough to permit entrance of a normal sized mouse, and that mice prefer such a low entrance as being similar to their preferred natural habitats. The width of the entrance is such that even pregnant female mice may still pass freely in or out of the shelter via the main entrance. This allows family groups to be housed in a single cage and permits all animals in the group to use the cage furniture.

Example 2

The inventors conducted a trial, comparing a shelter substantially as described in Example 1 above (referred to as the "Mousehouse"), with shelters based on two other items of commercially available cage furniture: one in the form of a substantially cylindrical, open-ended tube (the "tunnel" design) and one in the form of a substantially box-like shelter, with opposed sides comprising apertures formed by raised flaps (the "hangar" design). The tunnel and hangar designs as available commercially are of clear perspex material, and were modified by having a red tint applied.

Mice were placed in a cage containing one of the three items of cage furniture, and monitored for a fixed amount of time each day. A control group was also included, which comprised cages devoid of any cage furniture. Specific types of behaviour were noted, if exhibited by the mice, some behaviours being indicative of a degree of stress, other behaviours being similar to those observed in mice in their natural habitat and being indicative of a more "relaxed" state.

The method used in the trial was an application of "time budget sampling", a technique described by Martin and Bateson in 1986, "Measuring Behaviour: An introductory guide, CUP". This essentially gives a slice of an animal's behavioural repertoire at a designated time every day. In the present experiment this was in the dark phase, when the mice are most active.

The trials used 48 BALB/c mice at 7 weeks of age. The mice were divided into four groups by cage type as described above, including a control group. Each group consisted

of six male mice (held in two cages of three animals) and six female mice (also in two cages). Each animal was observed on three separate occasions and each observation was for five seconds per animal. This was done within a two-hour period, during the dark phase of their light cycle. These observations were done four times in each week and the study ran for four weeks.

Data were analysed using ANOVA (Analysis of Variations) method. This is a standard procedure which compares mean scores across different groups.

Statistical significance was determined at a value of less than 0.05. The results of the trial are shown below in Table 1. In summary, animals housed in cages containing a shelter in accordance with the invention used the shelter far more than those housed in cages with the other items of cage furniture; exhibited more natural diurnal behaviour; engaged in significantly more natural self-grooming and teeth maintenance, and less running; and were generally less stressed.

The adrenal glands of the mice were also examined. The adrenal glands of the mice housed in cages containing a shelter in accordance with the invention were lighter than those of other mice. Male mice, in particular, showed a considerable difference. A lighter adrenal gland indicates that less adrenaline is being produced, suggesting a less stressed animal.

Table 1

Behaviour	Whole-population comparison	Males-only comparison	Females-only comparison
Grooming self	Mousehouse mice groomed signficantly more than tunnel, Control and Hangar mice	Mousehouse mice groomed significantly more than tunnel mice	Mousehouse mice groomed significantly more than tunnel, Control and Hangar mice
Grooming others	No significant differences	No significant differences	No significant differences
Sniffing/investigation of others	Mousehouse mice sniffed/investigated others significantly more than tunnel and Control mice	No significant differences	Mousehouse mice sniffed/investigated others significantly more than tunnel, Hangar and Control mice
Sniffing bedding	Mousehouse mice sniffed bedding significantly less than Control mice	Mousehouse mice sniffed bedding significantly less than Control mice	Mousehouse mice sniffed bedding significantly less than Control mice
Sniffing bars	Mousehouse mice sniffed bars significantly less than tunnel, Control and Hangar mice	Mousehouse mice sniffed bars significantly less than tunnel and Control mice	Mousehouse mice sniffed bars significantly less than tunnel, Control and Hangar mice
Sniffing cage sides	Mousehouse mice sniffed cage sides significantly less than Control and tunnel mice	Mousehouse mice sniffed cage sides significantly less than Control mice	Mousehouse mice sniffed cage sides significantly less than Control and tunnel mice
Sniffing through bars	Mousehouse mice sniffed through bars significantly less than Hangar mice	Mousehouse mice sniffed through bars significantly less than Hangar mice	No significant differences
Gnawing bars	Mousehouse mice gnawed bars significantly more than tunnel and Control mice	Mousehouse mice gnawed ba significantly more than tunnel and Contr mice	Mousehouse mice gnawed bars significantly more than Control mice
Climbing/holding bars	Mousehouse mice climbed/held bars significantly less than Control mice	No significant differences	Mousehouse mice climbed/held bars significantly less than Control mice
Floor to bar wheeling	No significant differences	No significant differences	No significant differences
Base wheeling	No significant differences	No significant differences	No significant differences
Running around cage	Mousehouse mice ran significantly less than tunnel and Control mice	Mousehouse mice ran significantly less than tunnel and Control mice	Mousehouse mice ran significantly less than tunnel and Control mice
Jumping	No significant differences	No significant differences	No significant differences
Climbing on furniture	No significant differences	No significant differences	No significant differences
Resting on furniture	Mousehouse mice rested on furniture significantly more than tunnel mice	Mousehouse mice rested on furniture significantly more than tunnel mice	Mousehouse mice rested on furniture significantly more than tunnel mice
Entering furniture	Mousehouse mice entered furniture significantly more than Hangar and tunnel mice	Mousehouse mice entered furniture significantly more than Hangar and tunnel mice	Mousehouse mice entered furniture significantly more than Hangar and tunnel mice
Leaving furniture	Mousehouse mice left furniture significantly more than Hangar and tunnel mice	Mousehouse mice left furnitu significantly more than Hangar and tunn mice	Mousehouse mice left furniture significantly more than Hangar and tunnel mice

Example 3

The aim of this trial was to determine whether, within the spectrum of red plastics, rodents would exhibit any preference for the cage furniture constructed at particular single wavelengths.

The inventors conducted a trial, comparing frequency of rodent use of a number of separate shelters, each of the same size and shape (i.e. that of the embodiment illustrated in Figure 2).

The basic shelter was made from colourless, clear plastics material. Suitable filter materials were then applied to all the exterior surfaces of the shelters using clear, colourless adhesive (from 3M). A different filter was used for each shelter. The filters were supplied (from Lighting Technology, Park Royal, London) as 0.08mm thickness sheets and cut to size, taking care that all of the shelter surface was covered with the chosen filter. The filters were "cut-on" filters, and possessed quoted 50% transmission levels at 614.5nm, 610.5nm, 602.5nm, 593nm and 581nm wavelengths. The 602.5nm filter was a "Rosco supergel" filter, made from polycarbonate. All the other filters were Lee filters, made from polyester.

The optical properties of the filters are illustrated in Figures 3 and 4, which are both graphs of transmission (%) against wavelength (nm).

Figure 3 shows the transmission properties of the filters over the wavelength range 300-620nm. The Figure shows plots of % transmission for the various filters as follows: (A) 581nm filter; (B) 593nm filter; (C) 602.5nm filter; (D) 610.5nm filter; and (E) 614.5nm filter. As can be seen from the Figure, all of the filters substantially blocked (i.e. transmitted less than 20% of) all visible light of wavelengths less than 540nm. Light of longer wavelengths is transmitted, such that all of the filters transmitted are at least 60% of visible light with a wavelength of 620nm or more, but each filter had a particular wavelength (in the range 540-615nm) above which the % transmission increased dramatically. This is shown more clearly in Figure 4, which shows the same data, but for

the wavelength range 560-640nm. Again (A)-(E) refer to one of the 5 filters used. The "cut-on" wavelengths quoted for the filters transmit 50% of incident light. The % light transmitted rapidly increases above the cut-on wavelength.

The methodology employed was derived from the first trial. The same strain of animals was used and the same protocol followed (see Example 2 above). Data were again analysed using ANOVA and findings reviewed for any significances of less than .05. One finding emerged at the .05 significance level. This demonstrated that rodent use of the shelter comprising a cut-on filter at 593nm was significantly higher than those of other wavelengths.

Since all the coloured shelters were used to varying extents, and only a small sample of possible wavelengths was trialled, the inventors cannot demonstrate a unique rodent preference. However, the findings point to an increased preference for rodent use around the 593nm wavelength, and manufacture should concentrate on this area of the spectrum. Moreover, since a core advantage of the design is that it allows staff to view animals inside the shelter, the lighter orange/red colour of the 593nm wavelength, is of enhanced commercial practicality.

CLAIMS

1. A cage or an item of cage furniture for use by a caged animal, the cage or cage furniture comprising a material which is transparent or translucent to a human observer, but is perceived as being substantially darkened or opaque by the caged animal.

2. A cage or an item of cage furniture according to claim 1, wherein the cage or item of cage furniture is substantially or entirely formed from a substance which is transparent or translucent to a human observer but substantially darkened or opaque to the caged animal.

3. A cage or an item of cage furniture according to claim 1 or 2, wherein the cage or item of cage furniture is formed entirely from a synthetic plastics material, preferably by moulding, and preferably as a single component.

4. A cage or an item of cage furniture according to claim 1, 2 or 3, wherein the material comprising the cage or cage furniture is resistant to repeated autoclaving.

5. A cage or an item of cage furniture according to any one of the preceding claims, comprising polysulfone, polytherimide, and/or polycarbonate.

6. A cage or an item of cage furniture according to any one of the preceding claims, wherein the cage or item of cage furniture comprises coloured material.

7. A cage or an item of cage furniture according to claim 6, wherein the cage or cage furniture comprises red-coloured or red-tinted material.

8. A cage or an item of cage furniture according to claim 6 or 7, wherein the cage or item of cage furniture comprises a material which transmits less than 20% of visible light with a wavelength of less than 540nm.

9. A cage or item of cage furniture according to claim 8 comprising a material which transmits less than 20% of visible light with a wavelength of less than 560nm.

10. A cage or item of cage furniture according to claim 8 comprising a material which transmits less than 20% of visible light with a wavelength of less than 580nm.

11. A cage or item of cage furniture according to any one of claims 6-10, which comprises a material which transmits at least 60% of visible light with a wavelength of 600nm or more.

12. A cage or item of cage furniture according to any one of claims 6-11, which comprises a material which transmits, on average, at least 20% of light with a wavelength in the range 580-590nm.

13. An item of cage furniture in accordance with any one of the preceding claims, comprising a substantially right-angled triangular shaped floorless shelter.

14. An item of cage furniture in accordance with any one of the preceding claims, provided with fixing means to restrict the movement of the cage furniture within a cage.

15. An item of cage furniture in accordance with any one of the preceding claims, comprising at least two entrances.

16. A method of making a cage or an item of cage furniture, the method comprising the step of forming said cage or item of cage furniture, so as to comprise a material which is transparent or translucent to a human observer, but is perceived as being substantially darkened or opaque by a caged animal.

17. A method according to claim 16, performance of which results in production of a cage or an item of cage furniture in accordance with any one of claims 1-15.

18. A cage or an item of cage furniture made by the method of claim 16.

19. A cage or an item of cage furniture, substantially as herein described with reference to, and as shown in, the accompanying drawings.

20. A method of making a cage or an item of cage furniture, substantially as herein described with reference to the accompanying drawings.

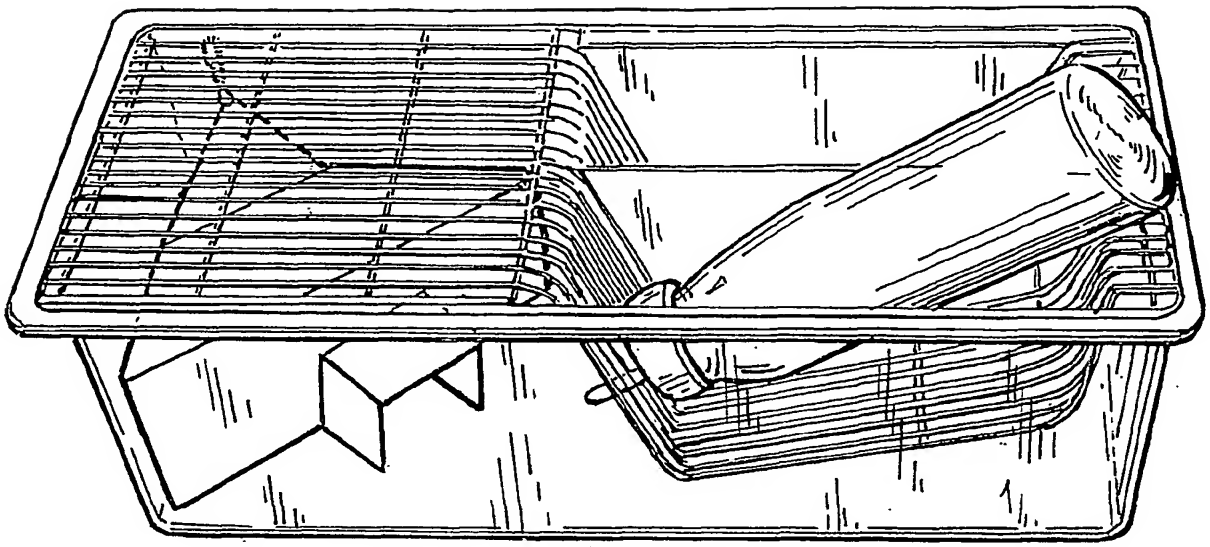


Fig. 1

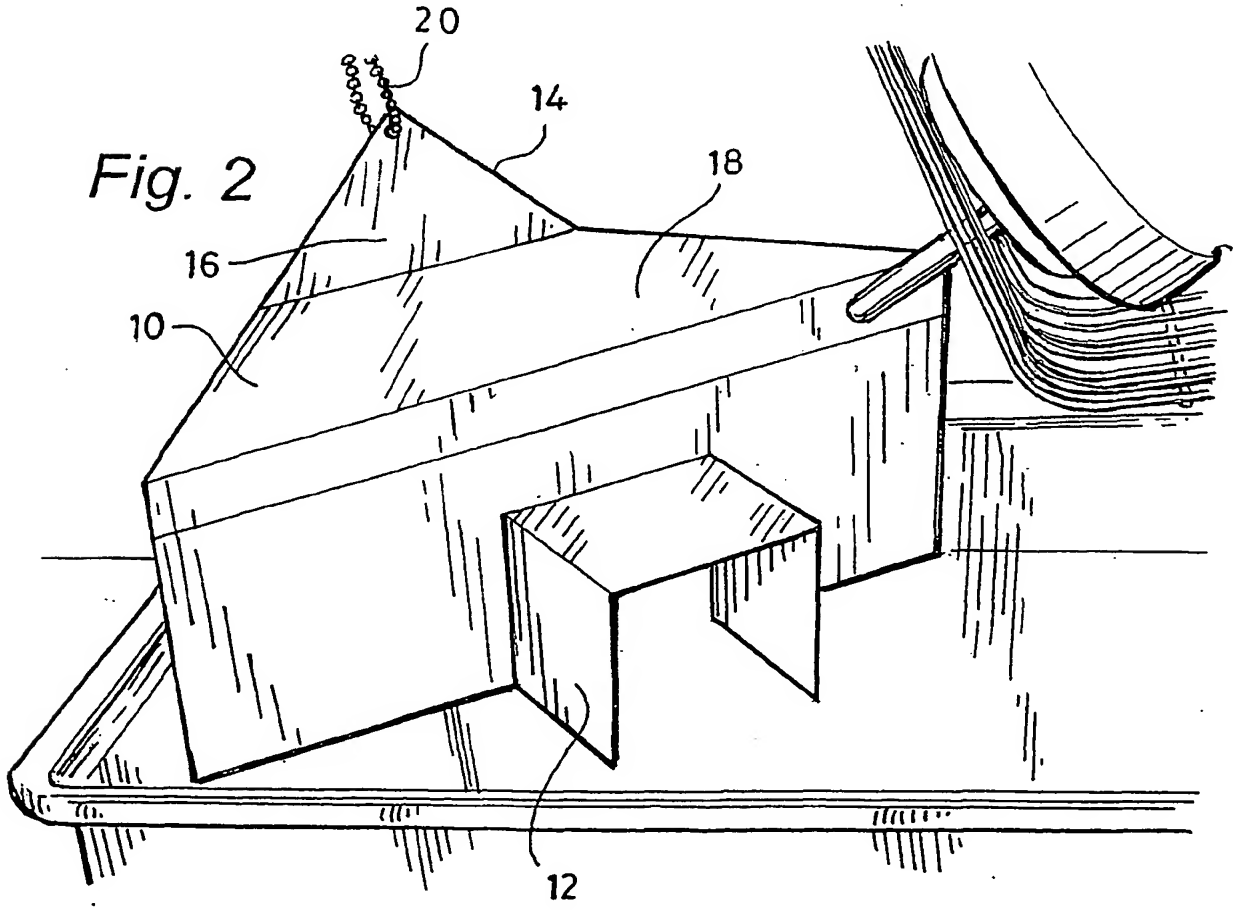
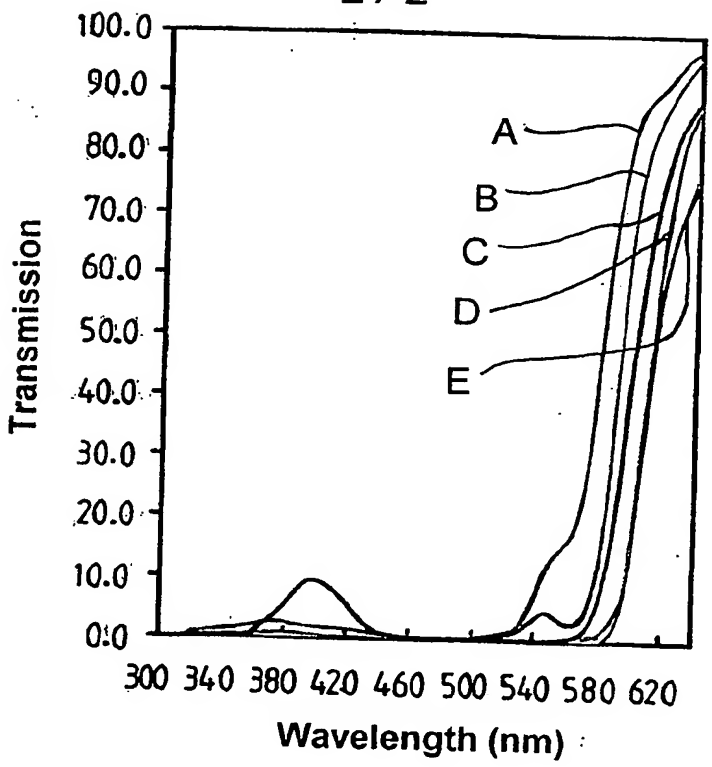


Fig. 2


100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
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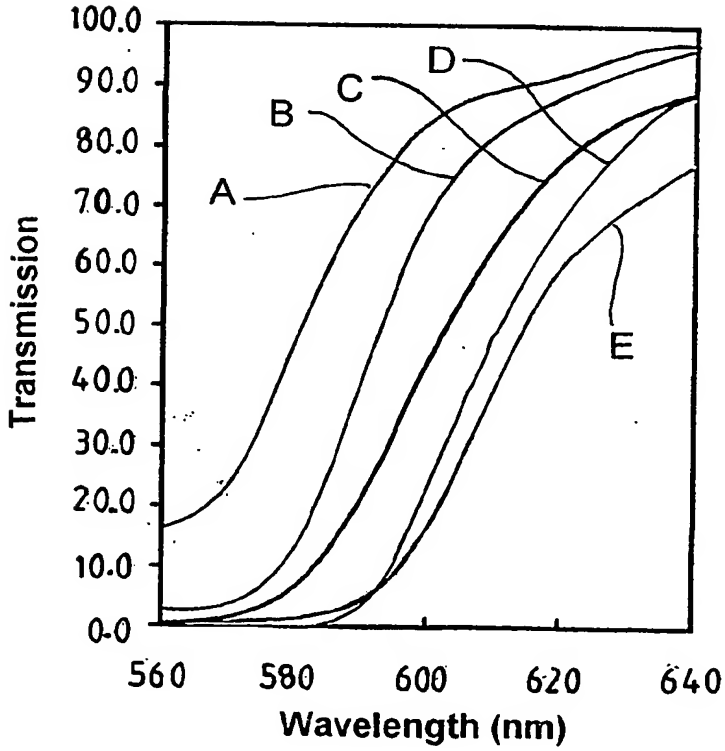
Transmission
A
B
C
D
E
300 340 380 420 460 500 540 580 620
Wavelength (nm)

Fig. 3


100.0
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40.0
30.0
20.0
10.0
0.0
Transmission
A
B
C
D
E
560 580 600 620 640
Wavelength (nm)

Fig. 4

PCT

DECLARATION OF NON-ESTABLISHMENT OF INTERNATIONAL SEARCH REPORT

(PCT Article 17(2)(a), Rules 13ter.1(c) and Rule 39)

Applicant's or agent's file reference	IMPORTANT DECLARATION	Date of mailing *(day/month/year)*
ML/C1263.1/M		29/10/2001
International application No.	International filing date *(day/month/year)*	(Earliest) Priority date *(day/month/year)*
PCT/GB 01/02949	03/07/2001	06/07/2000
International Patent Classification (IPC) or both national classification and IPC	A01K/00	
Applicant		
MEDICAL RESEARCH COUNCIL		

This International Searching Authority hereby declares, according to Article 17(2)(a), that **no international search report will be established** on the international application for the reasons indicated below

1. ☐ The subject matter of the international application relates to:
   - a. ☐ scientific theories.
   - b. ☐ mathematical theories
   - c. ☐ plant varieties.
   - d. ☐ animal varieties.
   - e. ☐ essentially biological processes for the production of plants and animals, other than microbiological processes and the products of such processes.
   - f. ☐ schemes, rules or methods of doing business.
   - g. ☐ schemes, rules or methods of performing purely mental acts.
   - h. ☐ schemes, rules or methods of playing games.
   - i. ☐ methods for treatment of the human body by surgery or therapy.
   - j. ☐ methods for treatment of the animal body by surgery or therapy.
   - k. ☐ diagnostic methods practised on the human or animal body.
   - l. ☐ mere presentations of information.
   - m. ☐ computer programs for which this International Searching Authority is not equipped to search prior art.

2. ☒ The failure of the following parts of the international application to comply with prescribed requirements prevents a meaningful search from being carried out:
   ☐ the description ☒ the claims ☐ the drawings

3. ☐ The failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions prevents a meaningful search from being carried out:
   - ☐ the written form has not been furnished or does not comply with the standard.
   - ☐ the computer readable form has not been furnished or does not comply with the standard.

4. Further comments: See further information sheet PCT/ISA/203

Name and mailing address of the International Searching Authority	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016.	Paul Faux

Form PCT/ISA/203 (July 1998)

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 203

All present claims relate to an extremely large number of possible products. In fact, the claims contain so many options that a lack of clarity and/or conciseness within the meaning of Article 6 PCT arises to such an extent as to render a meaningful search of the claims impossible. Consequently, no search report can be established for the present application.
In connection with this, it should be noted that the independent claims are directed to a desiderata without specifying concrete technical terms. Moreover, the said desiderata will largely depend upon the specific animal encaged.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.